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open country round about. Repeated searches in the Studebaker woods were rewarded by the discovery of a number of individuals that were sterile. I think I gathered the few I found. To my dismay I now find that they are not the males of either *A. mesochora* or *occidentalis*, not even right males at all. Their elongated involucre and undilated pappus-bristles declare them to be of that third phase, the neutral or the false-hermaphrodite one, of which mention is made above. If the real male plant shall come to light, either from the woods named, or, along with the female, from elsewhere, then may we hope to ascertain what the species is.

It is evident that not all the large-leaved plants of the prairie region can be distributed between the two species last named; but with the scanty materials at hand representing too imperfectly one or two species, perhaps yet to be made out, nothing more can be done.

A. CALOPHYLLA, Greene, Pitt. iii., 347. (27 Sept. 1898). Readily known at whatever stage of growth by the great dimensions of its foliage, the largest leaves more than two inches wide and not much longer, of thin texture, and permanently flocculent above. Known only from the limestone districts of southern Illinois and adjacent Missouri; but it should be looked for in similar parts of extreme southern Indiana, which still remains a region botanically unexplored.

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#### IV.—NEW PLANTS FROM NORTH DAKOTA.

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By J. LUNELL.

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During my botanical excursions in this state I have for many years paid a special attention to the multi-variable behaviour of the group of plants, known as *Laciniaria scariosa*, and made efforts to penetrate the secrets governing its remarkable changes. I have also had a splendid occasion to widen the scope of my observations by studying the fine material of Mr. C. C. Deam, secretary of the Indiana State Board of Forestry, who kindly placed it at my disposal, thereby enabling me to confirm my

views by observation of the similarity of manifestations under another latitude. I found that the North Dakota plants have some characters in common that distinguish them from their southern relatives, and therefore I will in the first place attempt to outline those general characters as they present themselves within this state as follows:

Stems, especially their upper part, pubescent with white shaggy hairs, 1-5 dm. high, single or several, erect or ascending from a large, somewhat woody tuber and bearing numerous or comparatively few leaves. Radical leaves long, lanceolate, protractedly tapering into very long petioles. The lower stem leaves are lance-oblong, tapering into petioles of very variable length. Upwardly the leaves becoming narrower and shorter and at last bract-like. The leaves are arranged on the stem in two series, and they are usually pubescent, sometimes glabrate, but never perfectly glabrous. Heads sessile to long-peduncled, of variable size, 1 to 12 in a short raceme, but occasionally 30 or more in a more or less dense spike or thyrus. Bracts in 4-7 series, green with purple, scarious, erose margins, the outer orbicular, the middle rows broadly spatulate, the inner oblong.

The Rocky Mountain forms as described by Prof. Aven Nelson (*Liatris ligulistylis*) are single-stemmed with glabrous leaves, else they appear in general characters to be near relatives of our plants. The North Dakota plant—as learned from Mr. Deam's material—differs considerably more from its southern relatives, principally in its shorter racemes and shorter involucre bracts and in its smaller size, the southern plants having many-headed spikes, often several dm. long, and the involucre bracts longer, sometimes pointed, more loosely imbricated, often so as to make them appear sub-squarrose. They are extremely beautiful and striking (one of them looking rather strange with its drooping heads).

When considering the *scariosa* group in its variety of forms, one would feel tempted to compare it with the genus *Hieracium* of the Old World, but the differential characters of the latter seem to be easier to systematize. The following suggestion of a key for the North Dakota group will be practically useful, though the multitude of intermediate forms forbids the application of the proposed names as indicating species and causes a great deal of hesitation even in using them as variety names:

## CLAVIS ANALYTICA VARIETATUM.

- A. Series foliorum inferior infimam tantum partem  
caulis prope tuber occupans.....1. var. BASILARIS.
- A. Series foliorum inferior tertiam usque ad di-  
midiam partem caulis quae infra inflorescentiam  
ad tuber pertinet occupans.
- (a) Folia series inferioris folia eiusdem series  
in caule altiora vel folia series superioris in-  
fima supereminentia.....2. var. SUPEREMINENS.
- (a) Folia series inferioris ad folia series  
superioris abruptissime gradientia, nullum  
autem folium quidquam in caule altius folium  
supereminens.....3. var. PRAECEPT.
- (a) Folia series inferioris ad folia series super-  
ioris abruptissime non gradientia.
- (b) Folia series inferioris ampla, longi-  
petiolata, valde remota.....4. var. PRAESTANS.
- (b) Folia series inferioris amplitudinem  
modicam neque petiolos tam longos prae-  
bentia, magis minusve remota.
- (c) Folia pubescentia.....5. var. MULTIPLEX.
- (c) Folia glabrata.....6. var. PERUSTA.
- (b) Folia series inferioris amplitudinem  
modicam, petiolos breves, angustos prae-  
bentia, nec non appropinquata.....7. var. ANGUSTATA.
- (b) Folia series inferioris breviora, lata,  
breviter et late petiolata, appropinquata.....8. var. OPIMA.

## KEY OF VARIETIES.

- A. The lower series of leaves occupying only the  
lowest part of the stem, close to the tuber.....1. var. *basilaris*.
- A. The lower series of leaves occupying one-third  
to one-half of that part of the stem reaching  
from beneath the inflorescence to the tuber.
- (a) The leaves of the lower series overtopping  
the leaves of the same series born higher up  
on the stem, or the lowest leaves of the upper  
series.....2. var. *supereminens*.
- (a) The leaves of the lower series passing very  
abruptly into the leaves of the upper series,  
but no leaf reaching above any leaf born  
higher up on the stem.....3. var. *praecept*.

- (a) The leaves of the lower series not passing very abruptly into the leaves of the upper series.
  - (b) The leaves of the lower series large, long-petioled and very distant.....4. var. *praestans*.
  - (b) The leaves of the lower series middle-sized, with shorter petioles, more or less distant.
    - (c) Leaves pubescent.....5. var. *multiplex*.
    - (c) Leaves glabrate.....6. var. *perusta*.
  - (b) The leaves of the lower series are middle-sized, with short, narrow petioles, and rather approximate.....7. var. *angustata*.
  - (b) The leaves of the lower series short and broad, with short and broad petioles, approximate.....8. var. *opima*.

The var. *basilaris* has short and broad leaves, is a small plant of no usual occurrence, and grows in dry, elevated soil.

The var. *supereminens* is a middle-sized plant with a very peculiar aspect, on account of the remarkable and sudden change between the lower leaves and those situated higher up on the stem. It is one of the forms that will be met occasionally.

The var. *praeceps* is an undersized or middle-sized plant, often with a pubescent, dense foliage along the whole stem, prefers a dry soil.

The var. *praestans* is a bright-green plant that generally becomes very luxuriant and beautiful. It is the largest of all of our varieties, and is quite common in valleys and ravines and in rich prairie soil with sufficient moisture.

The var. *multiplex* has broadly to narrowly lanceolate lower leaves with rather narrow petioles, is usually somewhat more than middle sized, not stout, more variable than the other forms, and is the most common of all of them.

The var. *perusta* is rather stoutish, with thickish leaves, and was found on sunny spots where the prairie and the woodland meet.

The var. *angustata* is rather stout, has leaves with shorter petioles than var. *multiplex*, but narrower and longer than the following variety. Occasional.

The var. *opima* is remarkably stout, with a profusion of short and broad leaves, on short and broad petioles, and the specimens I have seen show a large number of heads on stout, long peduncles,

born on a long, dense thyrsus. I have found it growing sparingly in meadows along running water.

Mr. E. S. Steele of the Smithsonian Institution named a few years ago one specimen from this state as a new species, and sent me his original description of it, in order to enable me to discover more material of it. All my attempts in this direction have been futile, and probably will be, as the plow constantly overturns the prairie and exterminates the wild flowers. By this time hardly any prairie is left intact here. I hope that Mr. Steele will publish this species some time.

The specimens from my herbarium used as types for the above descriptions show the characters markedly which are ascribed to the special varieties. Other specimens will sometimes show more or less conspicuous deviations from the rules. And it is an occasional occurrence that when two stems arise from the same tuber, either one shows an inclination toward different varieties or even "mixed" characters. This deterred me altogether from the idea of making different species out of my material. I met too many specimens that only partly allowed themselves to be forced into a "system" thus adding a second name to *Laciniaria scariosa*, and refused unconditionally to accept another species name.

Leeds, North Dakota.

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#### ADDITIONAL NOTE ON CYPRIPEDIUM ACAULE.

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By E. S. REYNOLDS.

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I was much interested when I happened upon Dr. Edward L. Greene's accounts of the ecology of the stemless Lady's Slipper which appeared in the early numbers of the *Midland Naturalist*.\* I am again reminded of his accounts by the finding of this same plant in another location which was only slightly referred to in one of the "additional" notes. Dr. Greene quotes from Mr. Skeels as follows, "It is also found, but not as plentifully, at Mill Creek in the same county, on the summits of sandy ridges, under pine and hardwood trees." To me the typical situation for the plants has always been under pine trees in a somewhat open wood. A few days ago while on a trip into the Cumberland Mountain

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\* Vol. I. p. 61, 125.